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AUTHOR Hanson, Jean T.
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ABSTRACT

The limited data available on secondary vocational education indicates that secondary vocational education is important. The leadership of the country and of Minnesota have recognized this through legislative endeavor and expenditures for programs. Analyses of statistics show that at least 78 percent of high school students need quality education and training to prepare them to participate in the work force and that unskilled jobs are not available and will not be. Research says that secondary vocational education is effective, but this research lacks a consistent, measurable database. Current studies on education seem to emphasize three themes: (1) there is a link between education and national survival, (2) improvement in the basic instructional program is essential, and (3) time is an extremely important resource in achieving educational goals. Regarding the relationship among basic skills, advanced technology, and vocational education, vocational educators and most of the American public recognize that improved levels of basic skills are needed for students to meet the technological and employment needs of the future. The abundance of research and the conclusions of other surveys should provide a focus for a balanced educational program that strives toward excellence and includes both vocational and academic components. (YLB)

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Jean T. Hanson, Ph.D.

This paper was prepared at the request of the Minnesota State Department of Education, Vocational-Technical Section with the cooperation of the State Advisory Council for Vocational Education. The data is based upon empirical research studies, commissioned study reports, Minnesota data and public hearings.

Dr. Hanson is currently a Presidential Appointee to the National Advisory Council for Vocational Education. She has been President of the American Vocational Association and Minnesota Vocational Association. She served as director of the Pine to Prairie Cooperative Center for nine years.

Her Ph.D. is in vocational education from the University of Minnesota. A part of her doctoral research included a survey of Minnesota Cooperative Vocational Centers. She has prepared and presented testimony on vocational education both at the state and national levels as well as writing for professional publications and performing speaking engagements throughout the United States.

February, 1984

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CONCLUSIONS

1. *The majority of students do not attend post-secondary training so their opportunity for vocational education terminates at the end of high school.*

2. *Unskilled jobs are increasingly unavailable and there is an increasing need for workers in the technically skilled areas.*

3. *Studies on the effectiveness of secondary vocational education show positive results, but just how effective is difficult to determine because of the lack of a consistent data base.*

4. *In a recent Minnesota study most students taking vocational education have a higher employment rate.*

5. *Financial resources have been a major factor in the retention or elimination of secondary vocational education programs.*

6. *The current educational studies concentrated on the need for excellence in all educational areas.*

7. *Better utilization of learning time would improve all of education.*

8. *Improved education in basic skills should benefit all of education and greatly improve the capabilities of vocational education.*

9. *Vocational education must participate as a full partner in the national campaign for excellence in education.*

10. *Employers recognize the contributions of vocational programs to business and industry.*

INTRODUCTION

The latest Gallup Poll on secondary education asked the question, "As you look ahead to the year 2000, what do you think the schools will be doing then to educate students?" A seventy-six percent response rate indicated that more importance will be given to vocational education in high school than is currently happening. This was the second highest answer with computer access and training being the only more frequently selected choice (Gallup, 1983).

Polls and studies of vocational education students, employers of vocational graduates and the general public all show support for secondary vocational education in Minnesota and across the nation. Yet, secondary vocational education in Minnesota and across the nation has recently been under attack.

This report is a compilation of the limited data available addressing secondary vocational education. It is based upon national empirical research studies, current commission reports, data from Minnesota studies and testimony presented at public hearings. The report is organized around the following pertinent discussion areas:

(A) Is Secondary Vocational Education Important?

(B) Is Secondary Vocational Education Effective?

(C) What Can Be Learned From the Current Studies on Education?

(D) How Do Basic Skills, Advancing Technology and Vocational Education Relate?

IS SECONDARY VOCATIONAL EDUCATION IMPORTANT?

The leadership of this country and of this state have recognized the importance of vocational education through legislative endeavor and federal and state expenditures for programs, beginning in 1917 and increasing since 1963.

President Reagan showed that this support has not changed when he addressed the Vocational Skill Olympics in Louisville, KY on June 29, 1983. "Vocational students," he said, "will shape, fit, mold, construct and program a new century for America. And once you've done that, you will tune it, alter it and repair it and nurse it along so that it keeps running smoothly. America has no higher stake than in the quality of your education, the sharpness of your skills and your opportunity to use them both in well-paying jobs. That's why our drive for excellence in education must reach every student in every school in every subject. We should see that all our young people get a good grounding in English and literature, history, math, science and the other basics....We must also recognize that our vocational classrooms are just as important as any other" (Reagan, 1983).

A common myth concerning secondary vocational education is that students will get their training in college or post high school. This simply is not true for the majority of students. Analysis of statistics from the National Center for Educational Statistics shows that of one hundred students entering first grade, seventy-two will graduate from high school. Of that number, forty-three will enter into post-secondary education and training. But, only twenty-two are likely to graduate from two or four year institutions during the period of four and a half years after entrance (National Center for Educational Studies, 1982).

This data led the National Advisory Council on Vocational Education to a concern that at least seventy-eight percent of high school students need quality education and training which will prepare them to participate in the workforce.

Another common myth deals with the availability of unskilled jobs. They are not available and will not be! Statistics from the Department of Labor conservatively estimate that only seven percent of all new jobs are unskilled; other sources show an even lower percentage (Bottoms, J., 1980). This points out the alarming mismatch of jobs and available skilled workers which is projected to increase. Industries that have traditionally employed the unskilled worker are no longer doing so. For example, Kellogg's of Battle Creek has not hired one unskilled worker since 1979.

This illustrates vividly the importance of secondary vocational education and related training to the economic well being of Minnesota and of this country. The seventy-eight percent of students who do not complete two years or more of post-secondary training is in opposition to critics of secondary vocational education who advocate the abolishment of secondary vocational education and recommend providing vocational training only at the post-secondary level. Simple logic suggests to us that if seventy-eight out of one hundred students do not complete two years or more of post-secondary education within four and one half years of completing high school and if unskilled jobs are not available, Minnesota may have great difficulty accommodating its unskilled workers.

IS SECONDARY VOCATIONAL EDUCATION EFFECTIVE?

The research says "yes", secondary vocational education is effective. But, it qualifies just how effective because of the lack of a consistent, measurable data base.

There has been much research concerning the effectiveness of secondary vocational education. The director of the National Research Council study, Education for Tomorrow's Jobs, summarized the finding of recent research stating that three or more vocational credits led to greater employment, job retention and wages than was true for students who have not taken vocational courses (Sherman, 1983).

The Research Council's aggregation of data indicated that secondary vocational education is effective, but precisely how effective cannot be measured because the clientele of secondary vocational education is not generally the same as the overall group of students. For example, secondary vocational students tended: 1) to have families where the fathers have lower educational attainment than the fathers of academic students, 2) to score lower on standardized achievement tests than academic students, 3) to work more outside school during their school years than their academic counterparts and 4) to include a greater percentage of minority rather than majority students. Consequently, in attempting to compare vocational and academic students regarding the effectiveness of secondary vocational education the same data base is not being used (Sherman, 1983).

What to measure and how to measure it is another frequent problem. In studies conducted by the National Center for Research in Vocational Education and by the Minnesota Research and Development Center, the findings were consistent. These findings suggest that vocational education makes a difference and its overall purposes are useful to students. Just <u>how</u> much of a difference vocational education makes was difficult to ascertain because homogeneous groups were not compared nor were the amounts of vocational education similar. In some Minnesota studies, students who have only one semester or trimester of vocational training may be equated to students who have two hours or more a day over a two-year period.

Student followup data collected by the Minnesota State Department of Education compared the characteristics of students taking and those not taking vocational education in Minnesota. (Table I) The data indicated that seventy-six percent of the students do take vocational education with almost equal percentages of the group in the upper fourth and lower fourth of their class. Of the students not taking vocational education, nearly forty-six percent were in the upper fourth of their class and ten percent were in the lower fourth. Following high school, nearly sixty-eight percent of the vocational students had paid

employment while fifty-two percent of the non-vocational students were employed. The unemployment rate was slightly higher for those who had not taken vocational education. Seventy-three percent of the students who did not take vocational education enrolled in post-secondary education while forty-six percent of those taking vocational education enrolled in post secondary education with sixteen percent of that group enrolled in vocational schools. The comparison does not include completion or attrition data for either group which might lower the percentages greatly.

TABLE I

A COMPARISON OF STUDENTS TAKING VOCATIONAL EDUCATION WITH THOSE NOT TAKING VOCATIONAL EDUCATION IN MINNESOTA HIGH SCHOOLS

Category	Taking Voc. Ed.	Not Taking Voc. Ed.
Total Students	76%	24%
High School Class Rank:		
Upper 1/4	21.5%	45.8%
Lower 1/4	24.0%	10.2%
Employment:		
Paid Emplcyment (including part-time)	67.8%	51.9%
Paid employment only	40.6%	18.5%
Unemployed	6.5%	7.9%
Further Education:		
Vocational School	16.1%	8.0%
Community College	6.9%	10.0%
Four Year College	23.6%	54.9%

June 1983

Student followup studies of secondary students in Minnesota have shown that the completion rate of post-secondary training was much lower than the entry rate and that the number of students entering post-secondary institutions is generally overestimated by local districts. Further, other studies show that the number of vocational students working after high school is generally around sixty percent (Copa, G., 1980; Hanson, J., 1980; Woods, E., 1981).

A 1983 study of vocational centers in Minnesota showed consistent support for secondary vocational education, however, the budget constraints appeared to be the controlling factor that affected retention, elimination and enhancement of programs. Other studies also show a high level of belief in the effectiveness of secondary vocational programs. Minnesota's problems related to the continuance of these programs appears to be associated with budgets and declining enrollments (Edin, S., 1979; Hanson, J., 1980; Hanson, J., 1980).

The attached appendix summarizes comments from testimony about secondary vocational education by business, government, education and labor leaders both nationally and in Minnesota.

WHAT CAN BE LEARNED FROM THE CURRENT STUDIES ON EDUCATION?

The multitude of current studies and commission reports on education bring an emphasis on education to the forefront in this country. They may be misinterpreted in relation to secondary vocational education when the media selects a few isolated examples or draws inferences that may not truly reflect the entire study. For example, some of the major studies were conducted in a limited number of states or selected regions of the country rather than across the nation as a whole.

Secretary of Education, Terrell Bell, in an October 28, 1983 speech to the National Advisory Council on Vocational Education, stressed that in the Nation at Risk study the intent in relation to vocational education is to

increase the training in related science and mathematics in order to support vocational education. This intent, according to Bell, was not to "add on" courses in general academic areas, but to improve the relevancy and effectiveness of all educational programs (Bell, T., 1983).

Michael O'Keefe of the Carnegie Commission noted that the intent of many of the studies was to concentrate on basic skills areas and not deal extensively with areas such as vocational education and the fine arts (Carnegie Foundation, 1983).

The most publicized of the current studies has been the Nation at Risk report. This report was particularly critical of the increase in general education courses that have taken up a greater portion of the student's day during the last twenty years. The chairman stressed that the criticism of general education courses did not include vocational education and the fine arts as components of general education. However, subjects such as home economics, industrial education, and business education have been equated as general education offerings and subsequent reports emphasize the importance of these subjects as general education and equally appropriate for all students (Goodlad, 1983).

Other pertinent studies discussed the role of the federal government, the states, and local communities in providing a core curriculum and giving equal opportunity for all students (Carnegie Foundation, 1983; ECS, 1983; Goodlad, J., 1983). The studies and reports seem to emphasize three themes.

There is a link between education and national survival. The link, of course, is implied in the title of the National Commission on Excellence in Education report, A Nation at Risk. The Education Commission of the States report dramatically illustrates the link between education, training and national survival in this way:

> Our success as a nation - our national defense, our social stability, and well being, and our national prosperity will depend on our ability to improve education and training for millions of individual citizens (ECS, 1983).

Improvement in the basic instructional program is essential. A common theme running through all the reports is the recognition that more must be done in the area of what can be considered the basic instructional program: English, mathematics, science and social studies. However, the need for program excellence is a major recommendation for all instructional areas.

Time is an extremely important resource in achieving our educational goals. Several of the reports comment on how time is being misused or not used properly to support specific educational goals. The reports urge that time available for learning should be increased through better classroom management, better organization of the school day, requiring more homework of students and increasing time on task.

HOW ARE BASIC SKILLS, ADVANCING TECHNOLOGY AND VOCATIONAL EDUCATION RELATED?

Vocational educators and most of the American public recognize that improved levels of basic skills are needed for students to meet the technology and employment needs of the future.

The National Advisory Council on Vocational Education recently prepared a report to the President and the Congress that was based upon national forums of business leaders across the country addressing education. Their major finding related to basic skills is that, "all students must acquire basic academic skills taught in a way that relates to the world of work." The report and these leaders of business and industry go on to explain:

> The basics, and computer literacy, should be stressed for students - those who plan to go directly into the world of work, or to enter college or post-secondary vocational programs. The goal of education should be mastery of the basics before students reach the last years of high school. Students entering vocational programs at the 11th and 12th grade levels should already have proficiency in the basics, and not have to take remedial training. Students who cannot read, write, compute, analyze and communicate cannot achieve competency in modern vocational-technical fields. For most students, these basics are best learned and retained when taught in an applied mode.

The 11th and 12th grade levels should include mutually reinforcing coordination between academic and vocational education. In all too many places, programs are totally separated with no linkages between them. Academic programs should be structured so they are available to vocational students who need to upgrade specific academic skills in order to enhance vocational-technical competencies. Conversely, vocational-technical programs can be utilized to demonstrate the applicability of abstract concepts in math, science, and other academic disciplines. Programs should be rigorous and relevant to student interests, and should utilize experiential learning through laboratory instruction, part-time work, community involvement, and other cooperative ventures with business, industry and other groups.

Excellence in education will not be achieved by increasing more of the same requirements without first reviewing existing programs for quality and relevance. Before lengthening the school day and adding more course requirements, administrators, school board members, and legislators must rethink how to provide meaningful and challenging education. A major problem for many students is boredom and lack of motivation, not lack of ability. If imposing more requirements, policy makers must be careful that quality vocational programs are not eliminated or so reduced in time as to make them useless in preparing students for employment

A recent report by Robert M. Worthington to the house subcommittee on elementary, secondary and vocational education summarizes the administration's viewpoint toward vocational education in reference to the recent educational reports.

As you know, the Commission (A Nation at Risk) recommended that all students in our secondary schools receive a firm grounding in the "five new basics" (English, mathematics, science, social studies, and computer science), that we raise our expectations for student performance (as expressed through the use of textbooks, tests, and college entrance requirements), that we make more effective use of the school day and, if necessary, extend the school day or school year, and that we take steps to improve teaching. These recommendations have provided a basis for our efforts in the Department of Education to strive for educational excellence.

How does vocational education fit into these efforts? Our belief is that vocational education must participate as a full partner in the national campaign for excellence, for the quality of our vocational classrooms will be as important to America's future as the quality of our academic classrooms. Students who enter the labor market immediately after high school, in addition to those who go straight on to college, must be proficient in the five new basics or they will not be able to compete successfully in today's job market. Vocational educators, like all educators, must be trained to provide high-quality instruction and should be rewarded on the basis of their success in this task. And vocational students must be educated and then certified to employers on the basis of rigorous, realistic standards, or else their training will not have been worthwhile.

> *A second major report, Education for Tomorrow's Jobs, by the National Academy of Sciences, stresses the importance of making the vocational education system an equal partner with college preparatory education in the educational system as a whole. We wholeheartedly endorse this recommendation and believe that our proposal, with its strong emphasis on program improvement, would make a major contribution toward realizing this goal (Worthington, R., 1984).*

These recommendations, as well as the abundance of research and the conclusions of other surveys should provide the focus for a balanced educational program that strives toward excellence and includes both vocational and academic components.

APPENDIX

COMMENTS FROM BUSINESS AND INDUSTRY

ON SECONDARY VOCATIONAL EDUCATION

As a small business owner in the State of Minnesota, I place a high value on secondary education. I employ 30 people in an agricultural business and I rely heavily on this system (vocational education) to provide me with a quality work force.

W. R. Kibble, President
Kibble Equipment

Secondary Vocational Education is an integral part of a well-balanced secondary education.

L. Robert Lee
Montevideo farmer

Providing secondary vocational educational programs is critical not only to the students of our high school system, but also to area industries and communities at large.

Larry S. Dowell
Executive Director, Chamber of Commerce

I'm a believer in this type of thing.

John Kleven
Kleven Ford

They get a taste of the real world, outside the classroom. (referring to office occupations on the job training)

Marie Scott
Office Manager
Special Ed Cooperative

We have employed vocational technical education students for the past ten years.....We feel that hiring vocational educational students has given our department the edge on future good competent help.

Robert J. Spencer
FMC Corporation

Secondary vocational graduates compete for entry level jobs with non-vocationally trained high school graduates. Their vocational training helps their applications float to the top and get closer scrutiny. Once hired, these graduates advance more quickly.

Carl Harpell
Bath Iron Works

Labor intensive jobs of the past will be replaced by jobs that will require higher order thinking skills such as inference, synthesis and analysis.

Chris Quackenbush
Q-Tech

Granted, basic education is important, and certainly needs improvement. But too many educators hear this line and conclude that industry will train all of its own people. The whole idea can be very misleading.

David Bigler
U. S. Steel

Whenever we do encounter persons with <u>any</u> record of vocational training, we immediately advance their application to the top of the stack.

Milt Homes
American Trasnportation Corp.

The basics of tomorrow will be the skills that are considered to be of higher level today.

Jesse Hibbetts
Dow Chemicals

This is one of the most exciting and one of the most challenging times there has every been for education. But I also leave you with this challenge: as we talk about mathematics, science, vocational education, if we don't do the job properly, and adequately, there's one thing we better start teaching our four and five year olds, and that is Japanese.

Dr. Scott Tuxhorn
Secretary's Regional Representative
Dallas

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